

**Financial Results of Mixed Farming
in
The Charotar Area of Bombay Gujarat**

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**A Thesis
FOR THE DEGREE OF *Ph.D.*
IN AGRICULTURAL ECONOMICS
OF
THE BOMBAY UNIVERSITY
1936.**

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BIBLIOGRAPHY

1. A Text Book on Indian Agriculture, J. Mollison, Vol.II.
2. Bombay Department of Agriculture Bulletin No.132 of 1926, by Mann, Patel and Musundar. The Improvement of Tobacco in Northern Gujarat.
3. Statistical Atlas of Bombay Presidency 1925, the Bombay Department of Agriculture.
4. Bombay Department of Agriculture Bulletin No.165 of 1930 p.5 by K.V.Joshi.
5. Soils of the Bombay Presidency by D.L.Sahasrabudhe, Bombay Department of Agriculture Bulletin No.160 of 1929.
6. The Census of India- Reports (1872 to 1931).
7. Papers relating to the Revision Settlement of the Anand Taluka of the Kaira Collectorate.
8. Principles and Practice of Farm Costing with Farm Studies by P.C.Patil, Bombay Department of Agriculture (1933).
9. Preliminary Studies of Important Crops in the Bombay Deccan in the Post-War period- P.C.Patil-Bombay Department of Agriculture Bulletin No.168 of 1932.
10. Farm Cost Studies in the United States by Merrill K.Bennett. 1928
11. Farm Economics, Management and Distribution by App-1924.
12. Land and Labour in a Deccan Village, Study No.I, Mann (1917).
13. Land and Labour in a Deccan Village, Study No.II, Mann (1921).
14. Life and Labour in a South Gujarat village- Mukhtyar.
15. Reports of the Banking Enquiry Committee.
16. Reports of the Royal Commission on Agriculture in India.
17. An Enquiry into the Revision Settlement of the Bardoli and Chorashi Talukas.
18. Report of the Deccan Canals Financial Improvement Committee (1932).
19. A Social and Economic Survey of a Konkan Village-Ranade-Provincial Cooperative Institute, Bombay Rural Economics Series No.3.
20. Rural Economy in the Bombay Deccan- Keatinge- (1912).
21. The Economic Life of a Bengal District- Jack- 1916
22. Fields and Farmers in Oudh- Mukerjee-1929.
23. Report on the economic condition of the Padra Taluka-Baroda State 1910.

24. An economic and Social Survey of 150 Farms Yenshan Country
Chiehli Province, China- Back- 1926.
 25. Report of the Debt Redemption Committee, Bhavnagar State.
 26. Some South Indian Villages- Slater- 1918.
 27. Economic Investigations in the Hydrabad State- Iyengar-1929-30.
 28. All the Publications of the Board of Economic Enquiry-Punjab.
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